

Notice of Allowability

Application No.

10/647,715

Examiner

Thanh Y. Tran

Applicant(s)

TSENG, HORNG-HUEI

Art Unit

2822

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 8/24/04.
2. ☒ The allowed claim(s) is/are 1-31.
3. ☒ The drawings filed on 8/24/04 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

DETAILED ACTION

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. David M. O'Dell on 11/04/2004.

2. The application has been amended as follows:

In claim 30, line 5, please delete "forming metal sidewall spacers on the sides of the stacked electrode" and insert: --forming a third metal layer over the stacked electrode to form metal sidewall spacers--.

Allowable Subject Matter

3. Claims 1-31 are allowed.
4. The following is a statement of reasons for the indication of allowable subject matter:

Claim 1 recites, inter alia, "*a method for making stacked metal-insulator-metal (MIM) capacitors on a semiconductor substrate comprising the steps of: depositing sequentially a first metal layer, a dummy layer, and a second metal layer on the insulating layer and, over the node contacts; patterning the second metal, the dummy layer, and the first metal layer and leaving portions over the node contacts; depositing a blanket third metal layer on the substrate and over the leaving portions, and etching back to form sidewall spacers on the portions to provide lower electrodes for the capacitors*"; and in the combination with other claimed features.

Claim 12 recites, inter alia, *“a method for making stacked metal-insulator-metal (MIM) capacitors on a semiconductor substrate comprising the steps of: depositing a first metal layer on the insulating layer and over the node contacts; depositing a dummy layer on the first metal layer, the dummy layer composed of an insulating material; depositing a second metal layer on the dummy layer; patterning the second metal layer, the dummy layer, and the first metal layer and leaving portions over the node contacts; depositing a blanket third metal layer on the substrate and over the leaving portions, and etching back to form sidewall spacers on the portions to provide lower electrodes for the capacitors”*; and in the combination with other claimed features.

Claim 22 recites, inter alia, *“a stacked metal-insulator-metal (MIM) capacitor on a semiconductor substrate comprised of: portions of a patterned stacked layer formed from a lower first metal layer, a dummy layer comprised of an insulating material, and an upper second metal layer, the portions over and contacting the node contacts; sidewall spacers formed from a third metal layer on the portions of the stacked layer for capacitor lower electrodes”*; and in the combination with other claimed features.

Claim 30 recites, inter alia, *“a method for making a stacked metal-insulator-metal (MIM) capacitor on a semiconductor substrate comprising the steps of: forming a stacked first electrode comprising a first metal layer, a dummy layer, and a second metal layer; forming a third metal layer over the stacked electrode to form metal sidewall spacers”*; and in the combination with other claimed features.

5. The art of record does not disclose the above limitations, nor would it be obvious to modify the art of record so as to include the above limitations.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

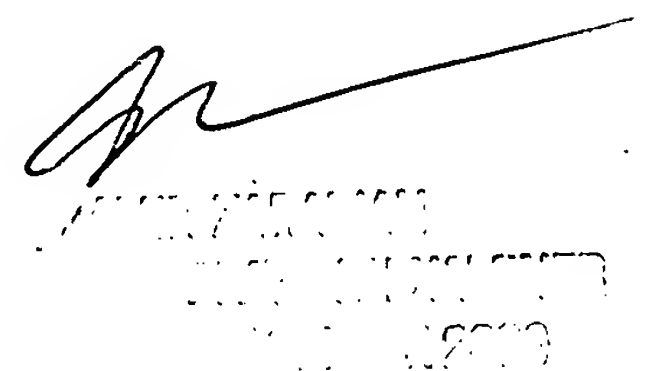
Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Y. Tran whose telephone number is (571) 272-2110. The examiner can normally be reached on M-F (9-6:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on (571) 272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TYT

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